

METHOD FOR MANUFACTURING MICROFLUIDIC CHIP WITH
ELECTROOSMOTIC FLOW CONTROLLED BY INDUCING
ELECTRIC FIELD THROUGH SELF-ASSEMBLED MONOLAYER

5 ABSTRACT

A method for manufacturing a microfluidic chip with electroosmotic flow (EOF) controlled by inducing a perpendicularly electric field through a self-assembled monolayer (SAM) is disclosed. The method is primarily to combine a top plate and a bottom plate; wherein the bottom plate has a gate electrode on an upper surface thereof and has the SAM formed on said gate electrode. The top plate has an elongate micro channel groove which is narrower than that of the gate electrode, recessed in a lower portion thereof and filled with a buffer solution. Accordingly, the flowing direction and the flowing velocity of said EOF are controlled by supplying high voltage to two ends of said micro channel groove to produce an electric field for driving EOF and supplying an inducing voltage to the gate electrode. The SAM of the present invention can be easily formed and thin enough to lower the inducing voltage required for controlling the zeta potential and have a smaller chip size. Furthermore, direction and velocity of the EOF can be controlled regardless of the acidic or neutral solution filled in the channel.